UNIVERSITY OF TAMPERE

The formation of competitive balance in the National Hockey League

Taloustiede
Maisterin tutkinnon tutkielma
Jesse Kiuru
2016

Taloustieteen laitos
Tampereen yliopisto
Johtamiskorkeakoulu

University of Tampere, School of Business
Department of Economics

ABSTRACT

Objectives

The objective of the thesis is to study the formation of the competitive balance in the National Hockey League. Unlike many studies related to the topic, I found it interesting to consider both the athletical and financial side of competitive balance. When it comes to the financial side, it is necessary to focus on the revenue sharing program along with franchise valuations. On the other hand, the objective is to show that there are major drawbacks when the competitive balance is solely related to the financial side of the business. When we also consider the athletical side of the business, it is possible to get a more comprehensive understanding of the formation of competitive balance in the National Hockey League.

Findings

Using empirical data from the NHL website along with relevant studies, I was able to create comparison between the financial competitive balance and the athletical competitive balance. The league utilized a revenue sharing program to address the financial inequalities, but it seems rather inefficient considering the significant differences in the franchise valuations. There are also major differences in the market size and fan base between franchises, which do not create equal possibilities for financial success. On the other hand, the athletical success of each franchise is efficiently taken into consideration.

Systems such as the reverse order draft allow franchises to gradually strengthen their competitive balance regardless of their financial situation.

Introduction

The National Hockey League is a professional sports association founded in the early 20th century. Starting out with six original franchises until 1968, the association has grown to a thirty-team league that covers almost the entire United States and Canada. Starting with the original six teams, the league was concentrated entirely in the Eastern parts of Canada and the U.S. After 1968 the league started to expand to new areas towards the west, and the expansion has proven to be more or less a gamble when considering the profitability and competitiveness of the added franchises. In the modern league, the financial differences between franchises are mostly equalized through a revenue sharing program that forces financially successful franchises, and the entire league, to share part of their revenue with other teams.

The main idea behind the revenue sharing program in the league is to maintain athletical and financial competitive balance between teams, and consequently improve the entertainment value. Entertainment value can be understood as a universal idea, basically meaning that each single game should be more or less based on unexpected outcomes. However, considering the nature of profit making in economics, it seems rather inefficient when economically profitable franchises are forced to hinder their growth via revenue sharing in order to maintain the league's idea of competitive balance. Instead of focusing solely on the financial side of competitive balance, it is useful to consider the influence that the financial situation of each franchise has on its athletical competitive balance compared to the league as a whole.

Competitive balance can also be linked closely with the drafting system that the league has established when it comes to acquiring new talent. The National Hockey League uses so called reverse order draft that lets athletically weaker teams draft the most potential players. This should, in theory, result in accumulation of talent over time, thus creating cycles of periodical success and poor performances. Later in the paper we will look more closely why this is not always the case. It is also necessary to address the "punishing success" idea when it comes to the reverse order draft and how it compares to the more traditional business related idea of rewarding success. Each franchise is being built according to current budget, motivation and prevailing restrictions by the league. This is why it becomes interesting to also consider the possibilities for low budget franchises to acquire high-end talents.

The third major area of interest is the distribution of franchises around the U.S. and Canada, and especially how individual franchises maintain athletical and financial competitive balance with the rest of the league. The league itself prefers as well distributed locations as possible in order to attract larger overall fan base, but it is up to the individual franchises to create their own plan of business. Market size is one of the most important factors when considering the profitability and valuation of each franchise, but it does not directly correlate to athletical success. It becomes a question of franchise owners' willingness to invest in winning a championship, maintaining a decent competitive record or focusing solely on the financial aspect of the business.

1. Competitive balance

Most literature around the idea of competitive balance relates to the idea that professional sports leagues should create as financially equal league as possible in order to maintain competitiveness in the league. This is a unique attribute of professional sports when thinking of other industries in economical terms. As Simon Rottenberg (1956) long ago noted "the nature of the industry is such that competitors must be approximately equal 'size' if any are to be successful" (Sanderson p.259). This notion is not entirely true in today's professional sports league, such as the NHL, but it holds the main idea of competitive balance. The most important notion of competitive balance on professional sports leagues comes from the idea of entertainment value. This basically means that competition between franchises is the product being sold, and that every game should be more or less based on unexpected outcomes.

There are great differences in the franchise values between teams that we will discuss further in the next section, but because professional sports franchises are in a business of selling competition, this inequality has been addressed. The National Hockey League has adopted a salary floor and salary cap system that equalizes the financial differences. This requires all franchises to remain within certain boundaries in terms of their player salary spending in order to maintain competitive balance in the league despite the great differences in the in the franchise values. Other means for maintaining competitive balance are the league adopted revenue sharing program and reverse order draft, both which will be specifically addressed later on.

1.1 Value calculations

As noted earlier, most literature around the idea of competitive balance in sports leagues focuses solely on the financial side of the business. To support the theoretical perspective on the matter, I researched actual franchise value figures from the NHL for the past five years. Using these numbers we can point out some serious flaws when the idea of competitive balance is being solely related to the financial side of each individual franchise and the league as a whole. The value figures are mandatory for each franchise to make public and thus it is possible to make comparisons on how the values have changed within and between franchises.

The main problem with relating competitive balance to financial equality arises from the fact that the franchises in the NHL are not even remotely evenly valued. This can be confirmed when looking at the franchise value figures in table 1.1. According to the table, the value difference between the most valuable and least valuable franchises in 2011 is approximately 387 millions. Comparing this difference to more recent valuation in 2015, we can see that that the difference has escalated significantly even with the revenue sharing process present. In 2015, the difference between the most valuable franchise (NY Rangers) and least valuable franchise (Florida) has increased to 1,014 millions. Taking these values into consideration, it is almost impossible to see how the financial competitive balance could be balanced in the league. This problem has been addressed in the league through the revenue sharing program and salary cap, but financial competitive balance seems highly problematic nevertheless.

The mean franchise value in 2015 is approximately 504.9 millions, while the median value is approximately 417.5 millions. Comparing these to the same value figures in 2011, we can see that the average growth rate of an NHL franchise has been approximately 100% during this time span. However, if we point out some abnormalities from the table we can see that there are significant differences in the growth rate of individual franchises. For example, the four franchises that have experienced the most growth since 2011 (Chicago, Washington, Los Angeles and Montreal) have grown in value terms over 150%. Now comparing this to the four franchises that have experienced the least growth since 2011 (Florida, Tampa Bay, Carolina and Columbus) we can see that their growth figures stay under 50% during the time span.

With these figures in mind it is hard to see how the competitive balance could only be measured in financial terms. After all, there are some naturally occurring differences between franchises that will not allow equal growth. These are for example location, fan base, athletical success and ownership incentives. All of these differences will be individually evaluated later in the paper.

1.2 Salary cap and floor

To address the significant differences in the franchise value figures, the NHL has adopted so called salary cap and salary floor system. This restricts all teams in the league to balance their player salary spending to a certain level. This is alternative to an open market system where there are no restrictions to salary spending. According to Zimbalist, economical theory would suggest that, under most assumptions, the cap system is more likely to

promote competitive balance (p.25). Thus it appears to be preferred mechanism for optimizing league performance. This can be tied again to the idea of entertainment value in the league, where the athletical equality is enforced even though significant financial differences do appear.

There is plenty of theoretical evidence on why the open market for player acquisition, and more specifically, player salary spending is not preferred when promoting the idea of competitive balance. Rosen argues in his study as follows:

> "It was claimed that an open market for player services would allow "rich" teams in the large markets to grab all the talented players, leaving little left over for the "poor" teams and their fans in smaller markets. Athletic competition allegedly would degenerate into groups of "haves" and "have nots." Games would be unfair and boring, and fan interest would wane unless these forces were contained. As discussed above, viewing this claim in terms of the Coase Theorem proves that it seriously flawed." P.26

The open market for players would almost certainly lead to situation where the markets for hockey entertainment would be concentrated to few areas and few franchises. These franchises would grow exponentially, but at the same time competition would degenerate and competitive balance would not exist. For the few strong franchises and especially their owners this would be profitable, but the aggregate value of the entire league would diminish into fraction of what it is in current situation.

To put this into perspective, the formation of dynasties in terms of athletical success is the situation that the league is willing to avoid at all costs. Even though the athletical domination most likely leads to financial growth for the individual franchise in a short-term period, it is interesting to consider the long-term consequences. As was established earlier, the league would suffer as a whole, but most likely so would the individual franchises also. According to a case study by Larsen, the NFL franchise that dominated the league in the 50's and 60's began to lose attendance even though their winning record was

unmatched in the league (p.375). This is another great example of the importance of the athletical competitive balance in sports leagues. It is important to notice that the competitive balance is vital for the league as a whole, but it is also important for the individual franchises over long-term projections.

Building on this, it is inevitable that one of the greatest challenges in terms of financial competitive balance comes from the financial viability for teams located in the weak-drawing markets. According to Fort "the analysis argues that an enforceable salary cap is the only of the cross-subsidization schemes that can be expected to accomplish that while improving the competitive balance in the league" (p.1296). Thus it can be expected that the salary cap system, and the revenue sharing program, are extremely important considering the financial competitive balance in the National Hockey League. The weak-drawing market franchises are important in terms of the overall market for hockey entertainment, but it is necessary to create supporting systems in order to keep these franchises even remotely competitive in financial terms compared to the franchises located in the stronger markets.

However, even with the salary cap and salary floor present in the current format of the NHL, the competitive balance in financial terms will not be perfectly balanced. Considering some actual quantitative examples to support the balancing idea of salary floor and ceiling, we can look at how the NHL has utilized the system in the league. Comparing the salary spending per franchise in 2011 season we can see how the spending is strongly correlated with the value figures. According to NHL.com, the salary floor that all franchises must reach was 48.3 millions in 2011, and the salary cap was 66 millions (accessed 5/15/13). In 2015 these figures have been modified to follow the aggregate growth of the

league by setting the salary floor to 52.8 millions and the salary cap to 71.4 millions. The 1,014 million difference between the values of NY Rangers and Florida in 2015 is a great example of how small part the salary spending is for the financially strong franchises, and consequently how significant it is for the weaker franchises.

1.3 Athletical success

As mentioned earlier, it is difficult to think of competitive balance as only being related to financial differences between franchises. I would suggest an alternative way of addressing the idea of competitive balance to see which franchises are actually competitive compared to others, considering the athletical side of the business along with the financial side. I would refer competitive balance to more of an athletical idea that compares the franchises in terms of athletical success rather than solely on financial success. The reasoning for this is that the financial figures will never be "competitive" around the league for obvious reasons, including location and the size of the fan base. When looking solely the athletical success, we can see which teams actually increase the entertainment value of the hockey business, and which teams could be relocated in order to have more positive influence on the local economy and the entire league.

When taking the athletical success way of comparing the competitive balance, I searched the year-end league positions of each franchise. The position in the league is determined by the win/loss ratio that each franchise reaches when the regular season is done. For obvious reasons the team with most wins and least losses finishes in the top of the standings and the team with least wins and most losses finishes is in the bottom of the

standings. Because each team plays against all the other teams in the league, the competitive balance between the teams is fairly accurate. According to Rosen and Sanderson, “it is impossible to reallocate resources in a sports league to increase the number of wins: each time one team wins a contest, the opponent loses, and the total number of victories is unchanged (Rosen p.3). The only way to increase competitive balance in this case is to make individual games and league positions more unpredictable.

Comparing the mean values in terms of league position, it is possible to compare how the competitive balance has changed over the years. According to table 1.2, there are six franchises that are moderately or significantly less competitive that other franchises in the league in long-term projections (ten years). In this case I decided to use the average value of 20 or over to correspond poor competitive performance. The closer the mean competitive balance number is to 30, the less competitive the franchise is athletically. The limit of thirty comes from the fact that the NHL holds thirty franchises in the league at the moment. The projected time frame of ten years should be enough time for any individual franchise to show improvement in athletical performance, taking into consideration the reverse order draft and revenue sharing that we will address in more detail later in the paper.

Comparing the competitive balance figures in table 1.2 and the value figures in table 1.1, we can see that the athletical competitive balance is strongly correlated with the financial success of all the franchises in the league. This basically means that franchises with good competitive balance are very likely to also have higher value than franchises with worse competitive balance. This correlation is clear when we take a closer look at the six franchises that have demonstrated poor competitive balance, in athletical terms,

compared to the rest of the league in the time span of ten years. Of the six poorly performing teams, five are valued clearly under the median value (417.5 million) of the entire league. On the other hand, if we were to consider the six franchises with the highest athletical competitive balance average, only Nashville is clearly under the median value average of the entire league.

Another useful athletical competitive balance comparison is the probability of winning the ultimate price (Stanley Cup). To use this information, I searched the list of Stanley Cup champions for the past thirty years (table 1.3). The time frame comes from the fact that in a perfectly competitive balance situation every franchise in the NHL could be expected to win the championship roughly every thirty years. The results, however, show that only fifteen franchises have been able to win the championship during this time span. Taking a closer look at the winners, we can see that of the eleven franchises only two (Carolina and Tampa Bay) are significantly under the median valuation in the league. On the other hand, of these fifteen franchises as many as seven show better than average growth figures during the studied time frame. It seems that it is not absolutely necessary to be competitive financially to be able to win the championship, but there is strong causality. The result also shows that the athletical competitive balance is not highly effective in the league, but we will look more closely at the reasoning for this later in the paper.

Considering the points made above, I would prefer addressing the idea of competitive balance from the athletical and financial perspectives. This is because the financial competitive balance does not seem relevant when considered alone. Both perspectives are extremely vital when considering team performances and optimal league

size, but looking at them simultaneously we can get a more comprehensive picture of the league.

2. Revenue sharing

The revenue sharing program that the NHL utilizes is one of the most important factors in the effort to maintain equality among the franchises. According to the NHL website "[The revenue sharing program] should continue – and even improve – the historic and unprecedented quality of play and competitive balance achieved" (accessed 10/09/16). This basically means that the top revenue-generating teams are required to allocate parts of these revenues to the financially struggling teams. The reminder of the revenue sharing pool will be funded from League-and Playoff generated revenue (Official NHL website).

Again, if we were to consider the revenue sharing idea from the financial side only, it has some serious shortfalls. The significant problem with relating competitive balance to financial equality arises from the fact that revenue sharing neither maximizes any franchise revenues, nor actually makes the competitive balance significantly more equal. The revenue-maximizing problem is quite straightforward; if a franchise is demanded to share part of its revenue with less profitable franchises, it cannot efficiently maximize its possible revenues. On the other hand, the shared revenue only allows the weak-drawing franchises to barely stay competitive in athletical terms, not to make them financially significantly more equal.

Promoting franchises that have relatively weak competitive balance, the league should be able to increase their competitive balance over time. As mentioned in the Economic Journal in 2001, "In leagues with 30 teams, the probability of winning the ultimate prize [finishing 1st] with equal distributions of talent in any given year is .033; thus, a team or city could expect to garner a championship about once a generation"

(Sanderson p.261). Obviously there are numerous variables that come into account when trying to win championships, such as coaching, player chemistry and even pure luck. In an imaginary league where the distribution of talent is equal, this most likely also results in a close to perfect competitive balance. While this scenario will never be possible, getting the probability as close to equal as possible will only work when the financial side is also more balanced. Considering all of this, it is easy to see how important competitive balance is for the entertainment value of the entire league.

If the revenue sharing would efficiently improve financial competitive balance, all franchises would have roughly equal salary spending. However, according to the NHL, in 2015 there were six franchises that were operating at the salary cap and six franchises that were at least eight million dollars away from the salary cap (accessed 26/9/16). This basically shows that the revenue sharing only enables certain franchises to reach the salary floor, not to actually be financially competitive with other franchises. What was perhaps not anticipated by the NHL is that the introduction of the revenue sharing welfare system would create a new model for success of low-revenue franchises (Zimbalist p.25). This is particularly referred to the financial side of each individual franchise. This has created a model for financial success even with poor athletical performance, as we will discuss in the next chapter.

2.1 Individual team motivation

According to most literature considering the idea of competitive balance and revenue sharing, the two are strongly correlated with each other. Revenue sharing has

been introduced as a means to increase competitive balance in the league (Dietl p.284). However, it is necessary to address the possible shortfalls that the revenue sharing program will have when thinking about the economical incentives of franchise owners. The revenue sharing program is a significant reason why not all franchises are necessary pursuing maximum competitive balance. According to National Bureau of Economic Research,

> "Perhaps due to the difficulties of establishing market price mechanisms for efficiently decentralizing the allocation of teams to each other, or due to adverse selection arising from the fact that lower quality competitors tend to free-ride on higher quality rivals unless given incentives not to do so" (Rosen p.5).

Taken into account the salary caps and salary floors, some less profitable franchises may not have any significant motivations but to maintain their payroll over the payroll floors to be eligible to stay in the league. After all, the less profitable franchises are not required to share any of their revenues, and on the top of that they do get help from other franchises in order to maintain the minimum requirements. The owners of these franchises may not have any significant motivation to increase their teams competitive balance compared to others as long as there will be no punishment for doing so. Owners have their own incentive on making marginal profit from the franchise regardless how the franchise does in the league.

It can be assumed that the hockey games themselves are not the main source of profit for the owners. As pointed out by Fort "Over and above earnings from the day-to-day operations of their teams is the main source of income for owners of professional sports teams, namely, capital appreciation of franchise values" (p.1292). This is interesting considering that the average growth rate of an NHL franchise since 2011 has been approximately 100% (table.1.1). It can be quite tempting for less valuable franchises to

keep investments to minimum while free riding on the league wide growth and revenue sharing.

The entire revenue sharing idea is based on the assumption that not all franchises have equal possibilities to pursue revenues. Journal of Sports Economics introduces a specific phenomenon regarding to revenue sharing, "According to the dulling effect, revenue sharing reduces the incentives for clubs to invest in playing talent because each club has to share some of the resulting marginal benefits of its talent investment with the other clubs in the league" (Dietl p.284). The dulling effect idea works for both the highly valuable and less valuable franchises. This is because highly valuable franchises are restricted to have only very few high-end talents in their team because of the salary cap. For obvious reasons, players with high point-per-game average or similar excellent statistics are more expensive than other players.

On the other hand, less valuable franchises are keen to let the high-end talents to free market because of the increasing costs of keeping the player over time. High-end talents are highly priced in the markets, and less valuable franchises rarely have the possibility to attract them. According to a Cornell and Princeton University study, league expansion imposes a negative externality on existing fans due to the ability to see fewer superstars per season (Kahn p.115). There is no doubt that the revenue sharing program improves the competitive balance in the league, but because of the dulling effect introduced by Dietl, some franchises will operate at a minimum budget and avoid any unnecessary investments all together. This again leads to the negative externality and possible negative consequences on the overall fan base.

2.2 Investment incentives

The special problem for sports leagues such as the NHL is the need to establish a degree of competitive balance that is acceptable for the fans. After all, sports leagues are in a business of selling competition; and consequently entertainment (Fort p.1266). The competitive balance problem is not so much in the drastic value differences between franchises, but in the individual franchises' interest in investing towards remaining competitive. These investments are not only in playing talent but also in venues, marketing, entertainment, staff, etc. Competitive balance distribution itself can be seen as a public good, where the league-wide fan base can enjoy more competitive and entertaining league. Comparing this to unrestricted free-market situation where only few franchises acquire all high-class talent and compete for the ultimate price.

These negative investment incentives can have negative influences on the consumer welfare also. As Kahn argues "In sports, for example, industry wide rules on the allocation of players or on the location of teams can enhance consumer welfare by improving the quality of entertainment" (p.116). When these rules are not perfectly followed, the allocation of players is not balanced in the league. If franchises are not motivated to investing in playing talent, the competitive balance will suffer and consumer welfare will deteriorate through drawbacks in the quality of entertainment.

Going back to the free-riding problem introduced earlier, it is interesting to compare the different incentives that individual teams have in the league. If all franchises would have the same incentive, and possibility, to spend maximum allowed on playing talent we would most likely have close to equal competitive balance. However, the problem is that

there are profit incentives for financially weaker franchises to sell players to financially stronger franchises until the revenue maximizing (not competitive balance) distribution in established (Fort p.1282). Franchise owners are in the entertainment and sports business to make profit, and if the financial input is limited, there are alternative ways (than winning) to remain profitable.

2.3 Risk aversion

Individual franchises are operated according to the ownership will and it becomes a question of incentives for the owner to pursue championship, win-percentage or profitability. Often these branches go hand in hand, but it also depends on the risk-aversion of the owner in where to invest the most. Risk averse owners should be less willing to invest large sums for the highly uncertain short run payoffs associates with winning a championship as compared to the more predictable payoffs from having a high win-percentage (Fort p.1270). This is a great example of different strategies that franchise owners can take considering most preferred outcomes. The game theoretical perspective can be applied here considering that only one franchise can win the ultimate prize at the end of each year.

Taking an actual example of the likelihood of winning the ultimate price in NHL competition (Stanley Cup), I will go back to the list of the past thirty winners in table 1.3. During this time span, total of fifteen franchises have been able to win the Stanley Cup, and only Detroit, Edmonton and Pittsburgh have been able to win back-to-back

championships[1]. Considering the time frame of thirty years and the fact that the NHL is utilizing salary cap system, revenue sharing and reverse order draft, it seems that there still are factors that contribute to the lack of competitive balance. After all, if we reflect this result to what the distribution of championships would be in a perfectly competitive balance situation, we can draw conclusion that we are not near that. In a perfectly competitive balance situation, a typical fan must wait on average 30 years for her franchise to win the championship. The likelihood of winning the ultimate price is probably a great factor in the owners' decision to build the franchise.

Professional sports highly rely on the entertainment value and the existing fan base for revenues. When thinking about the reduced investment incentives caused by revenue sharing in the league, it is easy to see the link to customer behavior. After all, high-class athletes are in a big role when making the franchise more interesting to spectators. While being a branch of business for many people, hockey is also entertainment for the public. Franchises that minimize investments to playing talent are highly unlikely to have any high-class athletes to attract a bigger fan base. The importance of this is inevitable considering that the team revenue is defined as a total revenue from gate tickets, broadcast media, stadium revenues, and revenues from licensing and media (Richardson p.397). Reducing the entertainment value of a franchise can be directly linked to reductions in the franchises revenues.

[1] The NHL was in lockout in 2005 for contract disagreements so there is no winner for that year

3. Expansion

Franchise value is one of the most important determinants on the possibilities for a franchise to operate a team that holds a high competitive balance. According to the Journal of Sports Economics, the franchise's value is mostly determined by the market size [including fan base], team performance and available facilities (Alexander and Kern p.62). While these determinants are all extremely important for franchise values, I would argue that the market size and fan base have the biggest impact in franchise values. These determinants again are strongly dependent on the physical location of any given franchise.

Here it is interesting to consider the continuing expansion of the NHL to less traditional hockey areas such as California, Arizona and Florida. We will focus on the various markets in where hockey franchises operate through game attendances, venues and local economies. All of these are important factors when considering the possibility and likelihood for a newly established franchise to operate a team that holds a decent athletical competitive balance along with financial stability. As we will later notice, it becomes more or less of a gamble considering the probabilities of a new franchise to become profitable and competitive compared to the rest of the league.

3.1 Market size and fan base

Any given franchise operates significant numbers of side businesses along with the games themselves. This is why it is extremely important to gradually strengthen the franchise's public image in order to consequently attract a bigger market. It is easy to realize the

significant differences in franchise values in table 1.1, and there can be many explanations why this is. One is provided in the NBER as follows, “Economies of scale account for why business tends to be so concentrated [in the NHL]. The cost of production (a performance, or the basic invention) is largely independent of the size of the audience; most of the costs are up-front, so average cost is decreasing in consumed output” (Rosen p.6). Because the size of the venues in where the NHL franchises operate is roughly equal around the league, the differences in revenue figures do not arise from these differences.

However, each franchise is allowed to price individual tickets as they please and there are significant differences in spectator attendance. This leads to a situation where it becomes a question of the competitive balance and consequently the entertainment value of a certain franchise. Whether or not the franchise has a large overall fan base is a great measure of how valuable the franchise will be. After all, sports games as an entertainment are rather excluded because of the values of each game ticket. Individual game tickets can be seen as a luxury good because of their excludability. The larger the franchises fan base, the more it has pricing power over the individual game tickets that are available to the audience.

This idea is extremely important when considering the difference between market size and fan base. Referring to Sanderson, population disparities between areas can create differences in aggregate willingness and ability to pay even when individual customers in the various host cities have identical tastes (p.262). Considering this, it becomes important to think about the population size, ability to pay and willingness to pay for athletical entertainment (hockey especially). Strong fan base most likely means high willingness to pay for hockey entertainment, regardless of the population size. In this case, the

investments in stadiums, playing talent, etc. become less and less risky for the franchise owners. Thus it becomes a question of finding the strongly profitable markets and expanding as long as the optimal league size has been reached.

It is challenging to estimate what could be the optimal league size in the NHL, mostly because of the point of view can create significantly different results. For example, if we only paid attention to the athletical competitive balance, the optimal league size would most likely be much smaller than if we only paid attention to the financial competitive balance. Kahn discusses on this topic as follows:

> "the optimal league size is smaller than the competitive league size because of the loss of consumers' surplus as the sport expands. In the local revenue model, the optimal league size is the same as the monopoly league size. This is the case because the league's maximization of total profit takes into account the willingness to pay by fans of inframarginal teams in making its expansion decisions, and the ability to charge different prices in different locations allows the league to capture consumer surplus" (p.116)

Taking a closer look at this, we can draw conclusions that the NHL has motivation to expand continuously since the aggregate revenue keeps growing as the league expands into new areas. Then it is owners and investors decision to decide whether or not they see a profitable business model in creating new franchises. The revenue sharing program is probably the most important factor that makes league expansion possible even to "unproven" markets.

To test this theory, we can evaluate what would happen if there would not be a revenue sharing program in the NHL. Assuming free entry to the market, the league size would most likely reach social optimum, as teams will enter as long as the marginal team has a positive value. In theory, this situation would lead to higher number of teams but also higher concentration of franchises to large "proven" markets. Most likely the overall fan base would diminish, as market would concentrate to a few areas with multiple franchises

in same market areas. In addition to this, even with revenue sharing with an appropriate entry fee, the league can attain the socially optimal size (Kahn p.117). To draw conclusion on this, it becomes evident that the National Hockey League does not pursue the socially optimal league size, but rather the revenue maximizing league size.

Going back to table 1.2, when comparing the franchise values and their changes for the last five years, we can clearly see the correlation between competitive balance and franchise value. Strong correlation is basically available whenever a franchise either has low competitive balance and low growth, or high competitive balance and high growth. Looking the league as a whole from 2011 to 2015, the mean growth rate of all the franchises combined was roughly 100%. The mean growth rate can be assumed to be quite useful considering that the median growth rate is also very near the 100% (104.5%). Keeping these figures in mind, we can easily point out the franchises that have abnormal growth values.

Taking into consideration the points made above, it is interesting to think what motivates the NHL to keep non-competitive franchises in the league. One clear explanation could be national TV-casting rights. When the league agrees on the rights to cast their games on the national TV, it is motivating to have coverage on the entire continent to reach as large audience as possible. In this case the market size for the NHL is the entire continent. Considering this from the perspective on the individual franchises, the motivation becomes also quite evident. As Fort mentions “franchise values exhibit plateaus of growth when league wide expansion in the number of teams is occurring, as simple economic intuition would predict” (p.1292). The revenue sharing program motivates the league to expand to new areas on a regular basis. The only question that rises from this is

whether there is some sort of natural upper limit to the number of teams that the league can maintain profitably, and more importantly, without deteriorating the entertainment value and competitive balance in the league.

3.1.1 Attendance

One extremely important factor considering the profitability and competitiveness of any given franchise is the attendance that the franchise has in its games. In a location study by Alexander, it is noted that recently established franchises are not higher valued (and usually lower) than established franchises. Explanations for this were that the new franchises have not had time to establish a strong fan base, and previous growth have already taken the best locations in terms of market for hockey entertainment (p.59). It also seems that the expansion of the league has generally been towards the more marginal market areas in terms of population, income and fan interest. Besides the value comparison, it might be useful to look into the attendance figures and venue capacity usage of individual franchises.

To get perspective on this matter, I searched the attendance and capacity figures from the 2013 season that show the average attendance and capacity usage percentages per game for each franchise (table 1.4). Perhaps the most interesting figures come from the highest and lowest figures. The franchise with the highest attendance per game (Chicago) had, on average, 21,640 people attending each home game. On the other hand, the franchise with the lowest attendance per game (Arizona) had, on average, 13,776 people attending each home game during the 2013 season. If we were to only look at the difference here,

there was, on average, a difference of 7,864 people attending each game. Assuming that there are also significant differences in ticket prices for these franchises games, it is easy to see how great of a difference the attendance figures make on the valuation of the franchises.

The other interesting figure we can look here is the capacity usage percentage for each franchise during the 2013 season. According to the franchise information for attendance in table 1.4, there were 21 franchises that had 100% usage capacity or very near that. On the other hand the nine franchises that barely reached 90% usage capacity also struggled in the athletical and financial competitive balance calculations compared to the league as a whole. None of the nine franchises were able to remain competitive both financially and athletically, and as many as five of them were not competitive in either category (Arizona, NY Islanders, Florida, Columbus and Carolina). From these figures it is easy to point out how important factors the market size and fan base are for individual franchises' aim to remain competitive with other franchises.

Comparing the franchises that are located in Canada and those in the U.S., we can see a clear difference. The franchises that are located in the U.S. had, on average, a usage capacity of 94.2% compared to the Canadian franchises that had on average of 99.7%. The average attendance figures followed the pattern with an average of 17,214 in the U.S. franchises and 18,412 in the Canadian franchises. There should to be a clear incentive to create or relocate franchises to Canada if we only compare the effectiveness of the markets from hockey franchises perspectives. The attendance and reliability to market attraction seems to be inevitable when we concentrate on the franchises that are located outside of

the U.S. markets. The similar pattern can be drawn from the valuation figures that we will concentrate in the next section.

3.2 Location

One major phenomenon seems to be that all of the franchises that are located in Canada (Montreal, Toronto, Winnipeg, Ottawa, Edmonton, Vancouver, Calgary) are doing relatively well when looking at the value growth. All of the Canadian franchises exhibit near or over the 100% value growth since 2011, and the mean growth value is 120%. Also if we were to compare the overall values of these Canadian franchises compared to the league as a whole, we can find similar results. According to table 1.1, the mean value of all the franchises in 2015 is about 505 millions, and the median value comes down to about 418 millions. Considering the strong skewness of the mean values resulting from greatly unbalanced growth figures, it can be more useful to use the results from the median values. Of the seven franchises located in Canada, five of then exhibit value figures higher, or similar to the median of the league. Of the two Canadian franchises that exhibit somewhat lower value (Winnipeg and Calgary), Winnipeg, can be explained by the very recent location change from Atlanta in 2011.

Comparing these figures to the corresponding figures of the franchises located in the United States, we can see some significant differences. Of the 23 franchises located in the U.S. over half of them (13) exhibit value figures that are lower than the median value in the league. Even more interestingly, as many as seven of these franchises exhibit significantly lower (more than 100 millions lower) franchise values than the league median. When

comparing the U.S. and the Canadian franchises, we can see that even the worst Canadian franchise (Winnipeg) would have higher value figures than eleven franchises located in the United States.

The athletical competitive balance also correlates the league wide findings for the most part. Using a competitive balance number of 15.5 (mean value) we can see some strong correlations between franchise values and competitive balance figures. Of the fifteen franchises that exhibit lower than median value figures, as many as ten of them also scored over 15.5 in the competitive balance calculations. This can be interpreted as there being a strong correlation between franchise's competitive balance in the league and its overall value in the market.

On the other hand, the hypothesis of franchise location presented in the beginning of this study does not correspond the findings. This is because after the league expansion in 1968, there are relatively mixed results in the franchise values. For example the Californian franchises are fairly strong in both franchise value and competitive balance comparison, but franchises like Arizona and Columbus have struggled. This most likely indicates that it really is more or less of a gamble when deciding to add or relocate a franchise in the United States. It also becomes evident that recently added franchises need significant time to build a competitive program. This can be seen from the most recently added franchises and their figures. Since 1992 the league has added eight new franchises (Florida, Tampa Bay, Arizona, Anaheim, Columbus, Ottawa, Minnesota and Winnipeg). Of these franchises, three exhibit lower than average growth, and struggles in the competitive balance comparison. On top of this, only one of these franchises is among the most competitive athletically or financially in the league (Anaheim atletical average 9.8).

In the case of expansion in the NHL, it is interesting to think what would be considered appropriate time frame for a new franchise to show that it can be competitive with the rest of the league. This question needs to be addressed relative to the location of the added franchise. In a case study by Alexander, there was no significant difference between recently added franchises and established franchises in terms of average values (p.59). Even though the study takes into consideration all major sports leagues in the U.S., it can be considered useful in terms of expansion consequences. This same result can be extracted from tables 1.1 and 1.2. If we only consider franchises that have joined the league later than 1992 (eight franchises), we can see that it really is more or less of a gamble when it comes to the growth and competitive balance of the added franchises. Of the eight franchises, five has showed positive athletical competitive balance when compared to the league average. On the other hand, only two franchises have showed positive financial competitive balance when compared to the league average.

3.3 Local economies

Thinking about the business that runs along with individual hockey franchise, there are numerous different internal or external ways of joining the business. However, while franchises that are valued in the top half of the league have little problems in supporting the surrounding business, it is not the case for the entire league. When again comparing the franchise values in table 1.1, it is easy to see which franchises and which locations are more attractive for surrounding business. If we were to compare franchises such as Toronto and Florida, the 1,014 millions difference in franchise value clearly does not come from team

performance in the league. The reason is that both of these franchises exhibit low competitive balance (24.4 and 21.1), but Toronto still holds the second highest franchise value in the entire league in 2015.

Depending on the value of the franchise, there are very different ways of having an impact on the local economies. The relationship between the franchises' costs and revenues is naturally one of the main factors when determining whether the franchise has a positive or negative impact on local economies. According to the Journal of Sports Economics,

> "NHL [franchises] all have certain basic costs, such as front office, facility rental and/or maintenance, team travel, promotion, ticketing, and so on, the share of [total revenues] represented by these costs shrinks as revenues rise. Other things equal, this leaves more room for profit, at any given player compensation share, in those leagues with higher revenues" (Zimbalist p.22).

The basic costs between franchises are roughly equal, but depending on the surrounding market size the differences between franchise values can grow exponentially.

The two franchises mentioned earlier, Saint Louis and Phoenix, both have arenas that are mostly financed by public money. Saint Louis arena was constructed using 34.5 millions of Saint Louis city contributed money. Phoenix, however, used the city of Glendale's funding for $180 millions for the construction of the arena. The $180 million consisted of $30 million in general obligation bond funding, and $150 million in excise tax funding [from the public] (ballparks.com accessed 5/11/13). Using significant amounts of public money just to get an arena to compete can be seen as lack of confidence from outside investors. Even though the arena most likely is not only for the use of the NHL franchise, it still puts some limits to the growth of the franchise.

Since individuals are generally against any sort of tax increases, it is hard to see how financing a sports arena could create any significant increases in public interest. After all,

even if the facilities are financed using tax money, it does not mean that any of the obtained revenue would come back to the public use. The public can only observe the possible increased entertainment value that a newly constructed arena can provide. For the league, however, the construction and renovation of arenas is only positive. This is because the likelihood that the public will notice the increased entertainment value of the league will escalate.

In case that the franchise's arena is privately financed, it is mostly up to the investors to cover any financial problems that the arena creates while used by the hockey franchise. Naturally the arenas also have other commercial use, but in terms of the impact that the hockey franchise has is partly covered by the investors. On the other hand, if the franchise's arena is financed with public money, it also means that the possible financial problems of the franchise keep having negative impact on the local economy. According to a study published in the Journal of Sports Economics, "the negative impact of NHL franchise is statistically significant in both short and long run. The overall results support the findings of prior research that professional sports franchises do not have a positive economic impact on local economies" (Lertwachara and Cochran p248). The study mainly concentrated on comparing the short- and long-term impacts on annual income (after tax) on people in the metropolitan area around the franchise. Even though the study can be slightly overstated because of the relatively small sample income directly around the franchise's location, it still shows how vulnerable the surrounding economy can be to some publicly financed franchise investments.

3.3.1 Venues

One of the biggest expenses for any NHL franchise is the cost of building, reconstructing or renting a facility to play official league games. It has a lot to do with the financial situation of the franchise when deciding what kind of arena it can use. According to ballparks.com, all arenas are either publicly or privately financed, or co-financed between public and private money (accessed 5/11/13). Looking at the three most valuable franchises in the National Hockey League (NY Rangers, Toronto and Montreal), all their arenas are financed by private investment money. On the other hand, looking at the three least valuable franchises (Phoenix, Columbus and Saint Louis) we can see that only Columbus' Nationwide arena is privately financed by Nationwide investments. From this we can draw conclusions that whether or not a franchise is doing well financially has a lot to do whether or not it is a burden or goldmine for local the economy.

Taking a larger field study into consideration, Aleksander studied the U.S. big four sports leagues (NHL, NBA, NFL and MLB) during 1994-2004 and how the venue construction had been financed. Of the total of 62 new stadiums constructed during that time frame, only 21 were even partially funded by state governments (p.56). This study can be considered as the basis for how the local economies influence the NHL franchises and vice versa. Even though the NHL is highly active in expanding the league into new economical areas, it is necessary to consider the franchise owners' risks and consequently the motivations that are correlated to this risk. Considering the stadium funding for example, it is easier to understand why certain franchise owners are highly risk averse when investing into player talent and athletical competitive balance. Because of the up

front costs that stadium for example bring to the franchises, other “un-necessary” investments might not be prioritized.

On the other hand, if we were to consider a franchise owner that operates in a highly profitable area, the up front cost of a privately owned stadium might be worth the significant investment. Again referring to the econometrical study by Aleksander, the findings reveal that franchises that operate in new privately owned stadiums have, on average, higher franchise values. Explanations for this phenomenon include the new revenue sources from renting the venue and opportunity to sell the naming rights of the stadium to investors (p.59). In this case it again becomes a question of the market size and fan base. If a franchise operates in a large market with large fan base, the investment most likely will be worth significantly over the original price. It is hard to see this scenario being true in small NHL markets.

Going along with the stadium naming rights is also the identities of individual franchises in the NHL. This means that each franchise can choose to base their identity to city specific naming (Anaheim, Chicago, Detroit) or regional naming (Arizona, Colorado, Minnesota). It is interesting to take a closer look at the impact that this has on the franchise values of these franchises. Looking at the table 1.1, we can see that six franchises have chosen to base their franchise to regional identity (Carolina, Minnesota, Florida, Colorado, Arizona and New Jersey). All of these franchises operate significantly under the median franchise values in the league, and all of them exhibit growth that is slower than the median growth in the league. It can be assumed that the motivation behind regional identity opposed to city specific identity has to do with attracting a larger fan base and larger markets in general.

However, as noted earlier, choosing a regional identity does not automatically mean that the franchise would attract larger markets or larger fan base. This can also be verified from Alexander's study where these identities have been addressed. According to the study, NHL teams with regional identity do not have, on average, a higher franchise value and that the effect does not vary with market size (p.61). One explanation for this could be that the teams with regional identity seem to be located in marginal or unproven markets. Of the six franchises that have chosen a regional identity, four are relatively new franchises (after the 1992 expansion). Also, it is safe to point out that areas such as Florida or Arizona can hardly be pictured as being classical hockey areas in terms of weather and sports cultures.

4. Drafting

Besides the revenue sharing program and the utilization of the salary floor&cap system, the National Hockey League has adopted a reverse order drafting system. What it basically means is that the league gives the worst performing (in athletical terms) franchises the possibility to draft the most talented young players each year. The drafting order depends on the year-end finishing position after the regular season has ended. In theory, this should allow poorly performing franchises to gradually strengthen their playing talent, and consequently improve their athletical competitive balance over time. On the other hand, this should also work from the opposite perspective, if a franchise is performing extremely well over many years, it should not be able to draft the potentially most talented players. Of course there are other significant factors also that contribute to how franchises are being built, but the reverse order draft is one important factor that supports the idea of competitive balance in the NHL.

4.1 Punish success, reward failure

Perhaps the most distinguishing factor that makes sports business different from other branches of business, is the fact that leagues like the NHL punish the most athletically and financially successful franchises. Along with the revenue sharing program, the reverse order drafting system is a prime example of this. In addition to this, the league also rewards the least athletically successful franchises with the possibility to draft high-end talents through the year-end draft. The reasoning behind this is to promote the competitive

balance in the league, and consequently avoid the creation of dynasties that would diminish the overall entertainment value, and possibly the overall fan base, of the league.

The basic idea of the drafting system is that the percentage possibility to gain the overall first pick in the draft grows the lower the franchise finished in the previous season. According to NHL.com,

> "While the top pick can now go to any of the 14 non-playoff clubs, or the team owning the rights to the first pick of a non-playoff club, the odds of winning the lottery are unchanged from previous years. The teams in the drawing are ranked in inverse order of their regular season point totals, with team one being the club with the fewest points, and team 14 being the club with the most points among those outside of the playoffs." (Accessed 5/8/13)

The percentage possibility of gaining the first overall pick is about 30% less per lower position in the year-end rankings. The importance of gaining the upcoming high-class athletes can be seen both in the financial and athletical side of each franchise.

Thinking this problem in more detail, it seems like there is a strong incentive for poorly performing franchises to finish at the very bottom of the standings in order to have the possibility to draft high-end talents through the draft. If we were to consider the percentage possibilities discussed above, it seems almost self-evident that franchises that are no longer in competition for high year-end positions during the season, should consider losing in purpose a viable option. According to Fort, the reverse order rookie draft is justified on competitive balance grounds, because it enables weak drawing franchises to acquire outstanding new talent at bargain price (p.1274). This is understandable and justifiable when thinking at the possibilities of small-market franchises to attract high-end talent, but there still is a problem considering the entertainment value of the National Hockey League.

The only significant problem for the owners' incentives to finish last is the different incentives by players. Player's salary is determined not only by the entertainment value that the player brings, but also statistical performance. High-class athletes are highly valued in the market pricing in professional sports. According to Vincent and Eastman,

> "A player's offensive performance is easy to measure to the extent that most studies use either career points per game, or goals and assists per game. His defensive performance, however, is inherently more difficult to measure… usually using statistics such as a player's career plus–minus record" (p.257).

Entertainment of a hockey game, among with winning games, has to do with individual performances on ice. The use of individual player statistics is a significant source of determining players projected salary in the market.

The player's bargaining power over his salary does not depend on the performance of the franchise that he plays in, but rather the individual performance of the player. According to Leeds, the bargaining power of a player from having a good year is greater when the player is relatively underpaid than when he is relatively highly paid (p.246). This would suggest that players that have not bargained contracts according to their current level of play are highly motivated to improve the individual performance. On the larger picture, there might occur some incentive differences between poorly performing franchises and high-performing athletes.

Going back to the drafting system in the league, the athletical competitive balance comparison in table 1.2 shows that the reverse order draft does not guarantee periodical success even if there are theoretical basis for that. The time frame of ten years should be enough time to expect improved competitive balance with any franchise because of the player drafting system that rewards least successful teams. According to the NHL, Florida selected the first draft pick three times in the last fourteen years (accessed 6/10/16), but it

has finished worst than 20th position on average in the last ten years. The similar phenomenon can be pointed out in the case of Edmonton, which has picked first three times and finished worst than 25th on average in the last ten years.

On the contrary, if we look at the best athletically performing franchises in table 1.2, we can see that there are four franchises that have, on average, finished better than 10th position in the last ten years. One explanation for this is that the franchises that have showed strong athletical competitive balance over the time frame also operate with stronger financial situation. All these four franchises (Anaheim, San Jose, Detroit and Pittsburgh) are close to or better than the average in financial valuation also. Next we will discuss in more detail why the reverse order draft does not automatically mean accumulation of talent and improved competitive balance.

4.2 Entry-level contracts

Perhaps the most significant problem with the reverse order draft and competitive balance comes from the financial situation of individual franchises. Even if a franchise is able to select first in the draft, the acquired player most likely becomes highly valued in the league rather quickly. The problem that arises again with the competitive balance is that these individual athletes usually tend to become too expensive for franchises that are balancing around the salary floor. Once these franchises sell their high-class athletes in order to keep costs to minimum, they again most likely weaken their competitive balance.

There are also studies about the success possibilities of draft picks, but as Rosen puts it, clear data are not available to calculate meaningful success possibilities for a

potential entrant, but they are vanishingly small (p.19). It is rather guaranteed for a franchise to acquire high-class talent if they are able to get the first draft picks, but after that it is a sum of many factors whether or not the draft pick will be of value for the franchise. Even if a certain player is drafted to the NHL, there is always so-called "option value to entry", meaning that each drafted player has the option to choose more financially valuable contracts outside of the NHL also.

The NHL implemented a short-term solution for the high-end talent salary problem by using limitations in salaries of new players. This was done to ensure slightly more balanced distribution of playing talent in the league. According to the NHL, first-year players are required to sign an entry-level contract that limits the salary that the drafting franchise must pay for the player. Depending on the age of the player, the maximum contract length is three year for players under the age of 21 (accessed 5/19/13). While this system definitely improves less valuable franchises' possibilities in obtaining high-end talent, the solution is still rather short-term. This primarily because not all first-year players enter the NHL right away once signing the contract, and secondly because after the rookie contract expires, these players most likely will become too expensive to keep for financially weaker franchises. The fact that each franchise only has 1-3 first-round picks in the draft also limits the possibilities in obtaining many short-term player investments to improve the franchises competitive balance (NHL.com accessed 5/19/13). The number is determined by each franchises' General Manager's actions during the year.

4.3 Expansion draft

Thinking about the competitive balance through the drafting system, it is quite straight forward how the reverse order draft increases the competitive balance of financially weaker franchises. However, it is interesting to consider the situation where there is a newly established franchise added to the league. According to the NHL, there is an expansion draft taking place every year when a new franchise is added to the league. The new franchise has an opportunity to draft players from other franchises, but with some restrictions. Every franchise that is required to allow the drafting of its players has the right to protect a total of nine players from the draft (accessed 13/10/16). It can be assumed that these franchises protect the most skilled and valuable players from being drafted to the new franchise, leaving only "second best" options.

In the case of the expansion draft, it can be argued that the new franchises are not given the opportunity to athletically compete with other franchises immediately after being added to the league. According to Larsen

> "In an expansion draft, each team in the league must allow for the expansion team to draft certain players. However, the existing teams are able to protect most of their top talent and leave very little talent for the new teams, making it difficult for them to field teams that are up to par with the rest of the league" (p.382)

Even though the aggregate value of the league increases when league expansion takes place, there is a shock to the athletical competitive balance. Over long-term projection, the added franchise will have the opportunity to trade with other franchises and cumulate playing talent through the reverse order draft. The competitive balance will most likely improve in the league regardless of the expansion, assuming that the ownership of the new franchise is willing to invest in playing talent, and consequently in increasing the competitiveness of the franchise.

5. Player demand

It was established earlier that sports leagues are unique among industries, in that competition between businesses (teams) in the industry (league) is the product being sold. Although monopoly prices and high subsidies for stadiums may harm consumers and taxpayers compared to competitive alternatives, federal courts have recognized the unique stand of sports (Kahn p. 116). Even though this is the case, it is important to recognize that there is demand for labor in the sports league just as there are to any other form of industry. Franchises are competing for playing talent and labor services in order to keep their competitive balance compared to the other franchises. Operating in the realms of the salary floor and salary cap system, each franchise is motivated to find as competitive roster as possible with a given budget.

What is special about the demand for labor in sports leagues, such as the NHL, is the fact that the marginal revenue that each individual player brings to the franchise is almost impossible to calculate. According to Rosen "the marginal revenue product of a particular player is the extra price that a spectator is willing to pay times the number of people who are attracted. Not only based on certain statistical fact such as goals etc…" (p.7). To put this into other words, a single player brings statistical value to the franchise in terms of points per game, but that hardly is the cumulative value. The business of hockey is also entertainment, and each individual player brings some entertainment value for the franchise also. We will discuss a little later about the salary formation per player and how individual franchises are built in terms of playing talent.

5.1 Free Agency

According to the NHL, the term free agency basically means that a player is free to sign with any other franchise without compensation to the current franchise (accessed 6/10/16). It is easy to see many drawbacks that this could have on the competitive balance in the league, and how the free agency can be disadvantageous for owners in economical terms. If we consider the drafting system discussed above, it is possible that even though a certain small market franchise is able to draft extremely high-class talent it might have difficulties in committing the player to long term contract. This is because it is in the power of the player to decide the desired contract after the entry-level contract expires. In this case the market pressure is on the players' side when considering franchises that are obtaining high-class players.

The allocation of players around the league is, to some extend, controlled by the salary cap and salary floor systems. However, the free agency forces small market franchises to react to the fact that they might not be the ultimately desired locations for players. This means that even though small market franchise is able to hold on to high-class talent for some time because of the entry-level contracts, it is necessary to be absolutely certain that these players will not reach free agency. This would mean that the franchise would not profit for the player if the player chooses to relocate after the entry-level contract expires. It becomes a question of maximizing team rents for the franchises and surpluses for the players. According to Rosen "the allocation of players among teams should maximize total team rents plus consumer surplus of players" (p.14). After all, both the franchises and the players are motivated to maximize their revenues.

Looking at the drafting system and free agency in a broader perspective, we can state that it is in the interest of the players, as well as franchises, to bargain a contract that maximizes utility for both. After all, the basic assumptions underlying the economical review of sports leagues' are 1) the profit maximization behavior by teams 2) the income maximizing behavior by players and 3) market equilibrium outcomes (Fort p. 1266). Even though the market is somewhat controlled in the business of sports, we can assume that franchises and players make economical decisions according to their expectations of revenue maximizing outcomes.

5.1.1 Monopsony power

The introduction of free agency has had a drastic influence on the monopsony power of individual franchises. This means that once the individual players' rights are no longer exclusively owned by certain franchises, the bargaining power of players have escalated by a great margin. Now players have the option to test their value in the free market when only few buyers cannot push market prices down. Prior to the advent of free agency, the monopsonistic teams were only constrained by the fact that they were forced to offer player a salary greater than or equal to the player's salary in the next-best occupation (Leeds p.246). Even though the free agency has had some negative consequences on the weak-drawing franchises bargaining power, it has increased the equality between franchises and athletes.

However, this has had some drawbacks on the training incentives of franchise owners, as they cannot be certain that players stay in the team for extended periods (Rosen

p.20). This leads to the situation where it is in the best interest of the franchise owners to get the maximum output from the current players and then negotiate contracts that maximize franchises' profits. For the financially strong franchises this does not create significant burdens, but this is not the case for financially weak franchises. It is hard to expect superstar athletes staying with financially weak franchises considering the revenue maximizing incentive for both the franchise and the athlete.

5.2 Team building

There are many restrictions to acquiring playing talent in the NHL, such as the salary cap and floor format, but eventually it has much to do with the financial situation of each franchise. According to the Forbes valuations, in 2015 the highest paid players earn over 14 million dollars for a single season (accessed 6/10/16). If we consider the maximum roster size (23 players) and the salary spending restrictions, it becomes evident that only financially strong franchises are on the market for superstar athletes. The competitive balance can hardly be seen as being entirely dependent on the salary spending, but it is impossible leave it unnoticed considering these facts. If a franchise is operating near the salary floor, it is almost impossible to even consider acquiring individual players that would take approximately 1/4 of the overall salary spending. On the other hand, franchises that operate at the salary ceiling the same proportion drops to 1/7 of the overall salary spending.

Each franchise had its own motivations and budgets when it comes to acquiring players, but there are some general assumptions when it comes to building a sports team.

First of all, players can be counted as being complementary goods in terms of replaceability. If a quality of team members go down, the demand (price) of complementary players go up. Basically meaning that selling franchises and individual players hold the bargaining power in terms of compensation when the demand for their services is high. Another factor that franchises need to take into consideration when building a team is that, on top of selling competition, they are also selling entertainment. Spectators pay exclusive prices for attending the games, and the true entertainment factor comes from players that hold so called superstar status.

5.2.1 Superstar externalities

It has been established earlier that athletical success does attract consumers (spectators) and increases franchises fan base. However, according to Sherwin Rosen "an increase in the number of consumers, or in the intensity of their demands for y, increases the market demand for services (p.855). To put this into context, the "y" in this statement refers to superstar status athletes, whose services can be expected to broaden the interest towards the franchise. This is an important factor for any franchise considering their motivations and objectives on how to build the franchise. This is one explanation for the salary differences in the NHL, and how the differences within team members can be justified.

In terms of league-wide influences that superstar-status athletes bring, it is necessary to consider the externalities that these athletes bring to the league. On top of the benefits that these athletes bring to the owning franchise, superstars attract fan interest all

over the league. This can be seen as a positive to the league as a whole, and not only the owning franchise. It is in the best interest of the league as a whole to produce these athletes, and promote their status. This is because of there is no better way to broaden the market for hockey entertainment than to use the positive externalities that these athletes bring in terms of aggregate fan base.

Conclusion

There are significant differences in the financial situations between franchises in the National Hockey League. Some of these differences are naturally occurring, such as the market size and location of each franchise, but there are also incentives to operate smaller value franchises for the owners. The National Hockey League has addressed these financial differences by implementing a revenue sharing program that requires stronger franchises to share part of their revenue with the financially weaker franchises. Considering the continuous expansion of the NHL to new economic areas, this is perhaps the only effective way of maintaining even remotely financially competitive league. However, there are two major drawbacks to this system; one being the incentive for some weaker franchises to operate small budget teams in order to generate revenue through the revenue sharing program. The other drawback has to do with hindering the economic growth of the successful franchises by forcing them to share their growth with other franchises.

When it comes to the athletical competitive balance, the National Hockey League has adopted a reverse order draft and free agency programs. For the financially weaker franchises, the reverse order draft is the most important channel for acquiring high-end

talent. This is because so-called “superstar” athletes are too expensive for franchises that are operating at the salary floor. For the individual athletes, the implementation of the free agency has created a way of maximizing their revenue over the career. Prior to the free agency era, the monopsony power was completely held by the franchises. In the modern league, the market bargaining power has shifted from the franchises to the individual players that are performing well.

In terms of franchise location, it is interesting to consider the continuous expansion of the NHL to economically new areas. As we have established throughout the paper, the league is motivated to expand on a regular basis. However, it becomes a question of new franchise owners’ willingness to invest in creating an athletically competitive team. It is also interesting to notice the distinguishing difference between franchises located in Canada and in franchises located in the United States. It becomes evident that the Canadian franchises are extremely strong when the financial side is considered, but the athletical competitive balance remains highly unpredictable. It is possible to predict the financial outlook of a newly established franchise through its market size and location, but the athletical performance almost impossible to predict.

Even though most literature focuses on the financial aspect of National Hockey League franchises when it comes to the idea of competitive balance, I would consider the simultaneous study between athletical and financial perspectives more efficient. This is because the financial side of the league will never be competitive, but the athletical side has the possibility to reach better competitive balance situation. After all, the National Hockey League and the individual franchises are in the business of selling competition. The

entertainment value of the league is vital for the financial success of the league, and the individual franchises.

Tables of content

Table 1.1

Team	Value 2011	Value 2012	Value 2013	Value 2014	Value 2015	% Change (2011-2015)
Vancouver	300	342	700	800	745	148
NY Rangers	507	750	850	1100	1200	137
Pittsburgh	264	288	480	565	560	112
St Louis	157	130	185	235	270	72
Boston	325	348	600	750	750	131
Nashville	163	167	205	250	255	56
New Jersey	181	205	320	330	330	82
Detroit	336	346	470	570	600	79
Philadelphia	290	336	500	625	660	128
Chicago	**306**	**350**	**625**	**825**	**925**	**202**
San Jose	211	223	405	425	445	111
Phoenix	134	134	200	225	220	64
Washington	**225**	**250**	**414**	**500**	**565**	**151**
Dallas	230	240	333	420	450	96
Ottawa	201	220	380	400	370	84
Colorado	198	210	337	360	360	82
Los Angeles	**232**	**276**	**450**	**580**	**580**	**150**
Buffalo	173	175	250	288	300	73
Florida	**162**	**170**	**240**	**190**	**186**	**15**
Tampa Bay	**174**	**174**	**180**	**230**	**260**	***49***
Calgary	220	245	420	451	435	98
Winnipeg*	164	200	340	358	350	113
Minnesota	213	218	330	370	380	78
Toronto	521	1000	1150	1300	1150	121
Anaheim	184	192	300	365	400	117
NY Islanders	149	155	195	300	325	118
Carolina	**169**	**162**	**187**	**220**	**225**	***33***
Edmonton	212	225	400	475	450	112
Montreal	**445**	**575**	**775**	**1000**	**1175**	**164**
Columbus	**152**	**145**	**175**	**200**	**226**	***49***
				Mean	**504.9**	**100.8**
				Median	**417.5**	**104.5**

All figures are expressed in millions of dollars[2]
Franchise values bolded refer to low-growth franchises
Franchise values bolded and underlined refer to high-growth franchises

[2] Figures extracted from the Forbes website "The Business of Hockey"

Table 1.2

Team	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	Mean
Vancouver	28	8	25	1	1	5	8	21	7	16	12
NY Rangers	9	1	12	2	14	20	12	13	16	10	10.9
Pittsburgh	**4**	**15**	**6**	**3**	**2**	**7**	**9**	**5**	**11**	**29**	**9.1**
St Louis	3	4	4	4	21	15	16	28	23	30	14.8
Boston	16	17	1	5	9	17	2	16	22	26	13.1
Nashville	14	6	19	6	11	8	20	17	2	6	10.9
New Jersey	20	25	20	7	22	6	4	6	6	8	12.4
Detroit	**15**	**12**	**15**	**8**	**6**	**11**	**3**	**1**	**4**	**1**	**7.6**
Philadelphia	13	24	13	9	5	14	11	14	30	9	14.2
Chicago	5	7	7	10	12	2	6	19	26	28	12.2
San Jose	**11**	**22**	**5**	**11**	**4**	**3**	**1**	**2**	**3**	**11**	**7.3**
Phoenix	24	29	18	12	15	4	24	23	27	22	19.8
Washington	1	9	17	13	3	1	5	11	28	27	11.5
Dallas	2	19	16	14	17	22	22	7	5	2	12.6
Ottawa	19	13	21	15	26	12	23	10	9	3	15.1
Colorado	21	21	3	16	29	13	28	9	12	13	16.5
Los Angeles	8	18	10	17	10	9	27	29	29	17	17.4
Buffalo	23	30	30	18	16	10	18	20	1	5	17.1
Florida	**7**	**20**	**29**	**19**	**28**	**28**	**14**	**22**	**21**	**23**	**21.1**
Tampa Bay	12	5	8	20	8	25	30	30	13	14	16.5
Calgary	26	16	27	21	18	16	7	15	15	7	16.8
Winnipeg	**25**	**14**	**22**	**22**	**25**	**23**	**25**	**27**	**14**	**20**	**21.7**
Minnesota	17	11	11	23	20	21	19	8	10	21	16.1
Toronto	30	27	23	**24**	**23**	**29**	**26**	**24**	**19**	**19**	**24.4**
Anaheim	**6**	**3**	**2**	**25**	**7**	**18**	**13**	**4**	**8**	**12**	**9.8**
NY Islanders	**10**	**10**	**26**	**26**	**27**	**26**	**29**	**25**	**18**	**24**	**22.1**
Carolina	18	26	24	27	19	24	10	12	20	4	18.4
Edmonton	**29**	**28**	**28**	**28**	**30**	**30**	**21**	**18**	**25**	**18**	**25.5**
Montreal	22	2	9	29	13	19	15	3	17	15	14.4
Columbus	**27**	**23**	**14**	**30**	**24**	**27**	**17**	**26**	**24**	**25**	**23.7**
										Mean	**15.5**

Yearly number refers to league finishing position that current year[3]
Franchise values bolded refer to high-performing franchises
Franchise values bolded and underlined refer to low-performing franchises

[3] Figures extracted from the "Official National Hockey League website"

Table 1.3

Year	Winner
1986	Montreal
1987	Edmonton
1988	Edmonton
1989	Calgary
1990	Edmonton
1991	Pittsburgh
1992	Pittsburgh
1993	Montreal
1994	NY Rangers
1995	New Jersey
1996	Colorado
1997	Detroit
1998	Detroit
1999	Dallas
2000	New Jersey
2001	Colorado
2002	Detroit
2003	New Jersey
2004	Tampa Bay
2005	(Lockout)
2006	Carolina
2007	Anaheim
2008	Detroit
2009	Pittsburgh
2010	Chicago
2011	Boston
2012	Los Angeles
2013	Chicago
2014	Los Angeles
2015	Chicago

Table 1.4

Team	Attendance	%-capacity
Chicago	21640	109.8
Montreal	21273	100
Detroit	20066	100
Philadelphia	19845	101.6
Toronto	19447	103.4
Calgary	19302	100.1
Vancouver	18910	100
Tampa Bay	18626	97
Pittsburgh	18619	101.3
Buffalo	18576	97.4
Minnesota	18523	102.5
Washington	18506	100
Los Angeles	18147	100.2
Ottawa	18109	94.5
NY Rangers	18006	104.7
St Louis	17593	91.9
Boston	17565	100
San Jose	17562	100
Edmonton	16839	100
Nashville	16600	97
Anaheim	16511	96.1
Colorado	16386	91
Dallas	15590	84.1
Carolina	15484	82.9
New Jersey	15012	85.2
Winnipeg	15004	100
Columbus	14901	82.1
Florida	14525	75.5
NY Islanders	13858	85.7
Phoenix	13776	80.4
Mean	17493	95.48
Median	17800	100

Table (1.3) refers to Stanley Cup winners[4]
Table (1.4) refers to average attendance figures in each franchise's home games in 2013[5]

[4] Information extracted from the "Official National Hockey League website"
[5] Figures extracted from https://hockeyattendance.com

Bibliography

Dietl, Helmut M., Martin Grossmann, and Markus Lang. "Competitive Balance And Revenue Sharing In Sports Leagues With Utility-Maximizing Teams". *Journal of Sports Economics* 12.3 (2011): 284-308. Web.

Kahn, L. M. "Sports League Expansion And Consumer Welfare". *Journal of Sports Economics* 8.2 (2007): 115-138. Web.

Larsen, A., A. J. Fenn, and E. L. Spenner. "The Impact Of Free Agency And The Salary Cap On Competitive Balance In The National Football League". *Journal of Sports Economics* 7.4 (2006): 374-390. Web.

Rosen, Sherwin and Allen Sanderson. "Labor Markets In Professional Sports". *The Economic Journal* 111.469 (2001): 47-68. Web.

Sanderson, Allen R. and John J. Siegfried. "Thinking About Competitive Balance". *Journal of Sports Economics* 4.4 (2003): 255-279. Web.

Zimbalist, A. "Reflections On Salary Shares And Salary Caps". *Journal of Sports Economics* 11.1 (2010): 17-28. Web.

Leeds, M. A. and S. Kowalewski. "Winner Take All In The NFL: The Effect Of The Salary Cap And Free Agency On The Compensation Of Skill Position Players". *Journal of Sports Economics* 2.3 (2001): 244-256. Web.

Fort, Rodney and James Quirk. “Cross-subsidization, Incentives, and Outcomes in Professional Team Sports Leagues” *Journal of Sports Economics* 33.3 (1995): 1265-1299. Web.

Rosen, S. “The Economics of Superstars” *The American Economic Review* 71.5 (1981): 845-858. Web.

Richardson, D “Pay, Performance, and Competitive Balance in the National Hockey League” *Eastern Economic Journal* 26.4 (2000): 393-417. Web.

Frank, R, and Philip J. Cook. “The Winner-Take-All Society” *The New York Free Press* (1995)

Mayer, Thomas. “The Distribution of Ability and Earnings.” *Review of Economics and Statistics* 42 (1960): 189-95.

Lertwachara, K., and Cochran, J. “An event study of the economic impact of professional sport franchises on local u.s. economies” *Journal of Sports Economics*, *8*.3 (2007): 244-254.

Alexander, D, and Kern, W. “The economic determinants of professional sports franchise values” *Journal of Sports Economics 4*.1 (2004): 51-66.

Vincent, C., and Eastman, B “Determinants of pay in the nhl a quantile regression approach” *Journal of Sports Economics 10*.3 (2009): 256-277.

Kesenne, S. “Revenue Sharing and Competitive Balance in Professional Team Sports” *Journal of Sports Economics* 1.1 (2000): 56-65.

Dietl, Helmut M., Markus Lang, and Alexander Rathke “The Combined Effect of Salary Restrictions and Revenue Sharing in Sports Leagues” *Economic Inquiry* 49.2 (2011): 447-463.

Fenn A.J., et al. “The Influence on Structural Changes and International Players on Competitive Balance in the NHL” *Atlantic Economic Journal* 33.2 (2005): 215-224.

Scully, G. (1995). “*The Market Structure of Sports*”. The University of Chicago Press: Chicago

Vrooman, J., "Theory of the Perfect Game: Competitive Balance in Monopoly Sports Leagues" *Review of Industrial Organization* 34.1 (2009): 5-44.

Lavoie M., "The location of pay discrimination in the national hockey league" *Journal of Sports Economics* 1.4 (2000): 401-411.

Szymanski, S., and Kesenne, S. "Competitive Balance and Gate Revenue Sharing in Team Sports" The Journal of Industrial Economics, 51.1 (2004): 165-177.

Szymanski, S. "The Economic Design of Sporting Contests" Journal of Economic Literature 41.4 (2003): 1137-1187.

Websites

"Official Site Of The National Hockey League". *NHL.com*. N.p., 2016. Web. 11 Oct. 2016.

Forbes website "The Business of Hockey" Retrieved from http://www.forbes.com/nhl-valuations/

Ozanian, M. (2013, 11 25). "*The business of hockey"* Retrieved from http://www.forbes.com/sites/mikeozanian/2013/11/25/the-nhls-most-valuable-teams/#15d0fa973d95

Ozanian, M. (2012, 11 28). "*The business of hockey"* Retrieved from http://www.forbes.com/sites/mikeozanian/2012/11/28/nhl-team-values-2012-maple-leafs-first-hockey-team-worth-1-billion/#7566b7331c36

Ozanian, M. (2015, 11 24). "The Business of Hockey" Retrieved from http://www.forbes.com/sites/mikeozanian/2015/11/24/the-nhls-most-valuable-teams-2/#2fb188cf3920

Ozanian, M. (2014, 11 25). "The Business of Hockey" Retrieved from http://www.forbes.com/sites/mikeozanian/2014/11/25/the-most-valuable-teams-in-the-nhl/#5c337ad67e5b

Ozanian, M. (2011, 11 30). "The Business of Hockey" Retrieved from http://www.forbes.com/sites/mikeozanian/2011/11/30/the-business-of-hockey/#4e3249b51310

Badenhausen, K. (2015, 11 24) "*The NHL 's Highest-Paid Players in 2015-16*" Retrieved from http://www.forbes.com/sites/kurtbadenhausen/2015/11/24/the-nhls-highest-paid-players-2015-16/#139bc5f41723

Hockeyattendance website retrieved from http://www.hockeyattendance.com/league/nhl/2013/?sort=avg_att

Capfriendly website retrieved from https://www.capfriendly.com/archive